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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,221	08/17/2001	Gang (Paul) Chen	SP01-235	4902
22928	7590	04/19/2005	EXAMINER	
CORNING INCORPORATED			LI, SHI K	
SP-TI-3-1			ART UNIT	PAPER NUMBER
CORNING, NY 14831			2633	

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/932,221

Applicant(s)

CHEN ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 and 12-19 is/are pending in the application.  
4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 9,10 and 12-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 11 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/12/2004.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Cormack (U.S. Patent 6,587,608 B2).

Regarding claim 18, Cormack teaches in FIG. 3 a non-interrupting switch 300. Cormack teaches in col. 6, lines 21-25 that the FBG 302 can be smoothly switched out of the network flow, then tuned, and then switched smoothly back into the network. Cormack teaches in FIG. 9a to use non-interrupting switches 908a, 908b and 908c for switching to a pass through state, tune wavelength and then switch to operate in a drop/add state.

Regarding claim 19, Cormack teaches in col. 2, line 59 that FBG can be tuned by stretching or heating.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 9-10, 12-14, 16 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. (K. Takahashi et al., "Reconfigurable Optical Add/Drop Multiplexer Using Passive Temperature-Compensated Wavelength Tunable Fiber Bragg Grating", OFC 2001, March 17-22, 2001) in view of Scotti et al. (R. Scotti et al., "A Hitless Reconfigurable Add-Drop Multiplexer for WDM Networks Utilizing Planar Waveguide, Thermo-Optic Switches and UV-Induced Gratings", OFC '98, 1998).

Regarding claims 9 and 18, Takahashi et al. discloses in FIG. 1 a reconfigurable optical add/drop multiplexer (ADM) comprising an input port, an output port, a tunable fiber Bragg grating and two circulators. The difference between Takahashi et al. and the claimed invention is that Takahashi et al. does not teach switches and pass through waveguide. Scotti et al. teaches in p. 142, left col., first paragraph that it is desirable for an ADM to be hitless. Scotti et al. teaches in FIG. 1 to use thermo-optic switches and pass through fiber (lower path) to achieve a hitless ADM. Scotti et al. teaches in p. 142, right col., first paragraph the operation of the ADM wherein with both switches in the off (cross) state, the optical signal proceeds from the input port, through the lower path to the output port. When both switches are in the on (bar) state, the signal proceeds from the input port through the upper path, where the grating reflected output goes to the drop port and the grating transmitted signal goes to the output port. One of ordinary skill would have been motivated to combine the teaching of Scotti et al. with the reconfigurable ADM of Takahashi et al. because the approach of Scotti et al. is hitless, i.e., the addition or dropping of a channel is made without disrupting the traffic on the other channels. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to include switches and pass through waveguide, as taught by Scotti et al., in the reconfigurable

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ADM of Takahashi et al. because the approach of Scotti et al. is hitless, i.e., the addition or dropping of a channel is made without disrupting the traffic on the other channels.

Regarding claim 10, Takahashi et al. teaches to use optical fiber for the first waveguide. It would be obvious to also use optical fiber for the second waveguide because of compatibility and because fiber is commonly available.

Regarding claims 12-13, Scotti et al. teaches thermo-optic 2x2 switches.

Regarding claims 14 and 16, Takahashi et al. teaches in FIG. 1 a controller and in page WDD93-2, first paragraph a piezoelectric actuator for tuning wavelength.

Regarding claim 19, Scotti et al. teaches to tune by heating.

5. Claims 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al. and Scotti et al. as applied to claims 9-10, 12-14, 16 and 18-19 above, and further in view of Kersey et al. (U.S. Patent 6,594,410 B2).

Takahashi et al. and Scotti et al. have been discussed above in regard to claims 9-10, 12-14, 16 and 18-19. The difference between Takahashi et al. and Scotti et al. and the claimed invention is that Takahashi et al. and Scotti et al. do not teach heater and compression actuator for tuning FGB wavelength. Kersey et al. teaches in col. 14, lines 55-67 various methods, including heater, compression and tension for tuning Bragg gratings. These are equivalent mechanisms for adjusting the wavelength of a FGB. Where the claimed differences involve the substitution of interchangeable or replaceable equivalents and the reason for the selection of one equivalent for another was not to solve an existent problem, such substitution has been judicially determined to have been obvious. See *In re Ruff*, 118, USPQ 343 (CCPA 1958). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to replace

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piezoelectric actuator of the modified ADM of Takahashi et al. and Scotti et al. with heater or compression actuator.

***Response to Arguments***

6. Applicant's arguments with respect to claims 9-10 and 12-19 have been considered but are moot in view of the new ground(s) of rejection.


***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl  
7 April 2005

  
Shi K. Li  
Patent Examiner